CLAIMS

1. A pivot hinge mechanism supporting a main body and pivotable unit pivotably in relation to each other, the pivot hinge mechanism comprising:

a stationary plate installed to one of the main body and pivotable unit;

rotating plates installed to the other of the main body and pivotable unit; and

a spindle supporting the rotating plates rotatably in relation to the stationary plate,

the stationary and rotating plates having formed therein openings through which a harness routed between the main body and rotating portion is penetrated; and

the opening in the stationary plate and those in the rotating plates being formed for at least a part thereof to overlap each other in an angular range in which the pivotable unit is pivoted in relation to the main body.

2. The pivot hinge mechanism according to claim 1, wherein the opening in the stationary plate and those in the rotating plates are formed to have a nearly circular shape having a predetermined width and extending divergently in a predetermined an angular range about the spindle.

3. The pivot hinge mechanism according to claim 2, wherein the angular range of the openings in the stationary and moving plates is larger than a half of a maximum angle through which the pivotable unit is pivoted in relation to the main body and smaller than the maximum angle.

4. The pivot hinge mechanism according to claim 1, wherein the harness is a flexible printed circuit board and can be folded back between the openings in the stationary and moving plates in which the folded-back portions of the flexible printed circuit board overlap each other.

5. The pivot hinge mechanism according to claim 1, further comprising a first friction mechanism and second friction mechanism, which give friction to between the rotating and stationary plates at the inner and outer walls thereof.

6. The pivot hinge mechanism according to claim 5, wherein the first friction mechanism includes a leaf spring, pressing plate and friction plate, disposed with the spindle being penetrated between the stationary plate and rotating plates,

the leaf spring compressed between the stationary and rotating plates forcing the pressing plate which will thus be pressed to the friction plate to generate friction.

7. The pivot hinge mechanism according to claim 5, wherein the second friction mechanism includes:

a peripheral annular plate including a ring portion being in sliding contact with the main side of the periphery of the rotating plate, opposite to the stationary plate, and a flange portion projecting from the periphery of the ring portion toward the stationary plate and in a direction in which the diameter is larger and which is installed to the stationary plate; and

a leaf spring fixed to the stationary plate and disposed being compressed between the stationary plate and periphery of the rotating plate,

the leaf spring compressed between the stationary plate and periphery of the rotating plate pressing the rotating plate whose periphery will thus be forced to the ring portion of the peripheral annular plate to generate friction.

8. The pivot hinge mechanism according to claim 7, wherein the second friction mechanism includes a second rotating plate supported rotatably on the spindle while catching the ring portion between itself and rotating plate and which is installed integrally to the rotating plate through inside the ring portion.

9. An imaging device, comprising:

a main body having provided therein an imaging unit to capture an image of an object;

a grip unit having provided therein a recording unit to record the image captured by the imaging unit and installed pivotably to one side of the main body; and

a pivot hinge mechanism supporting the main body and pivotable unit pivotably in relation to each other,

the pivot hinge mechanism including a stationary plate installed to one of the main body and pivotable unit, rotating plates installed to the other of the main body and pivotable unit, and a spindle supporting the rotating plates rotatably in relation to the stationary plate,

the stationary and rotating plates having formed therein openings through which a harness routed between the main body and rotating portion is penetrated, and the opening in the stationary plate and those in the rotating plates being formed for at

least a part thereof to overlap each other in an angular range in which the pivotable unit is pivoted in relation to the main body.

10. The imaging device according to claim 9, wherein the opening in the stationary plate and those in the rotating plates are formed to have a nearly circular shape having a predetermined width and extending divergently in a predetermined an angular range about the spindle.

11. The imaging device according to claim 10, wherein the angular range of the openings in the stationary and moving plates is larger than a half of a maximum angle through which the pivotable unit is pivoted in relation to the main body and smaller than the maximum angle.

12. The imaging device according to claim 9, wherein the harness is a flexible printed circuit board and can be folded back between the openings in the stationary and moving plates in which the folded-back portions of the flexible printed circuit board overlap each other.

13. The imaging device according to claim 12, wherein the flexible printed circuit board has a portion bent in plane with a predetermined curvature and is folded back between the openings in the stationary and rotating plates where the bent portions overlap each other.

14. The imaging device according to 13, wherein the curvature radius of the bent portion is nearly equal to that, about the spindle, of the openings in the stationary and rotating plates.

15. The imaging device according to claim 12, wherein the harness is a double-side printed circuit board.

16. The imaging device according to claim 9, further comprising a first friction mechanism and second friction mechanism, which give friction to between the rotating and stationary plates at the inner and outer walls thereof.

17. The imaging device according to claim 16, wherein the first friction mechanism includes a leaf spring, pressing plate and friction plate, disposed with the spindle being penetrated between the stationary plate and rotating plates,

the leaf spring compressed between the stationary and rotating plates forcing the pressing plate which will thus be pressed to the friction plate to generate friction.

18. The pivot hinge mechanism according to claim 16, wherein the second friction mechanism includes:

a peripheral annular plate including a ring portion being in sliding contact with the main side of the periphery of the rotating plate, opposite to the stationary plate, and a flange portion projecting from the periphery of the ring portion toward the stationary plate and in a direction in which the diameter is larger and which is installed to the stationary plate; and

a leaf spring fixed to the stationary plate and disposed being compressed between the stationary plate and periphery of the rotating plate,

the leaf spring compressed between the stationary plate and periphery of the rotating plate pressing the rotating plate whose periphery will thus be forced to the

ring portion of the peripheral annular plate to generate friction.

19. The imaging device according to claim 18, wherein the second friction mechanism includes a second rotating plate supported rotatably on the spindle while catching the ring portion between itself and rotating plate and which is installed integrally to the rotating plate through inside the ring portion.